


FERMILAB NEWS

 **Fermi National Accelerator Laboratory**

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FERMILAB'S NEGATIVE HYDROGEN ION SOURCE - SUPERB TECHNOLOGICAL ACHIEVEMENT

Fermilab's negative hydrogen source is a technological achievement that has been recognized nationally for its contribution in advancing accelerator science.

It's one of the reasons the operation of the accelerator here has improved in recent times. (See front page article in the July 10, 1980, issue.) These negative hydrogen ions--hydrogen atoms each with an extra electron--are the source of the protons that circulate around the Booster and Main Ring. The two electrons are stripped off each negative hydrogen ion as it is injected into the Booster, thus giving the familiar proton.

"The whole purpose was to increase the efficiency of injection into the Booster," explained Chuck Schmidt, physicist with the Linac Group and one of the key scientists who refined the negative hydrogen source. Others who participated in the development include Russ Huson, head of the Accelerator Division, who encouraged and strongly supported the research; Curt Owen, now with the Booster, who was leader of the Linac Group at the time the source was coming into fruition; and Cy Curtis, physicist with the Linac and presently group leader.

Also, Jim Wendt and Ray Hren, principal technicians with the Linac pre-accelerator (Cockcroft-Walton); Mike Shea, Bob Goodwin and Bob Florian of Controls, and many others who played significant roles.

Not only is the negative hydrogen source developed at Fermilab doing its job here, but other accelerator scientists across the country are adopting or considering the source for their machines, said Schmidt. The Chinese scientists who are studying here will be using it for their accelerator near Beijing (formerly Peking), he added.

"We like the negative hydrogen approach because of the ease and efficiency with which we can inject into the Booster," said Schmidt. "Operationally, it is easier to



In the "I-minus pit" (L-R) are Chuck Schmidt, Bob Florian, Cy Curtis, Mike Shea, Bob Goodwin, Jim Wendt and Ray Hren.

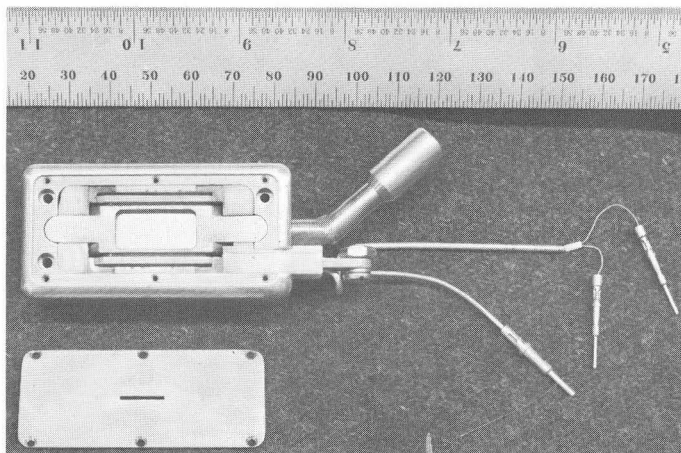
work with negative hydrogen ions than with the protons we were originally using."

The prototype negative hydrogen source Fermilab had came from the Brookhaven National Laboratory in early 1976. "Through 1976 and early 1977, our people modified the source and made it useful for accelerator use," Schmidt related. "In the summer of 1977, we installed it on a high voltage set in the Village and tested it for a week. With this successful test completed, we moved the source and the high-voltage set to the pre-accelerator area, and put it into operation. The first beam was injected into the Linac in October 1977. In March 1978, we began using the negative hydrogen source for high energy physics."

Fermilab now has two negative hydrogen sources: one is in the "H-minus pit," that's in the west Cockcroft-Walton, and the other one is in the "I-minus pit," which is the east Cockcroft-Walton. The negative hydrogen source in the I-minus pit became operational in the summer of 1979 replacing

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Plasma source showing anode cover with aperture and cathode surface within the anode.

the proton source which had been in use at Fermilab until 1978.

(Historical note: The Feb. 20, 1976 issue of the Brookhaven Bulletin shows a picture of Curtis accepting the prototype negative hydrogen source from Theo Sluyters of the Brookhaven Accelerator Department. The final paragraph of the article said, "Participating in the tests of the negative ion magnetron source were Cyril Curtis and Charles Schmidt of Fermilab. Their experience with this source at the 400 GeV synchrotron will be of great interest to laboratory researchers and may speed up the application of charge change injection..." How right the author was.)

CHEZ LEON

Tuesday, August 5 - 7:30 p.m. - \$9.00

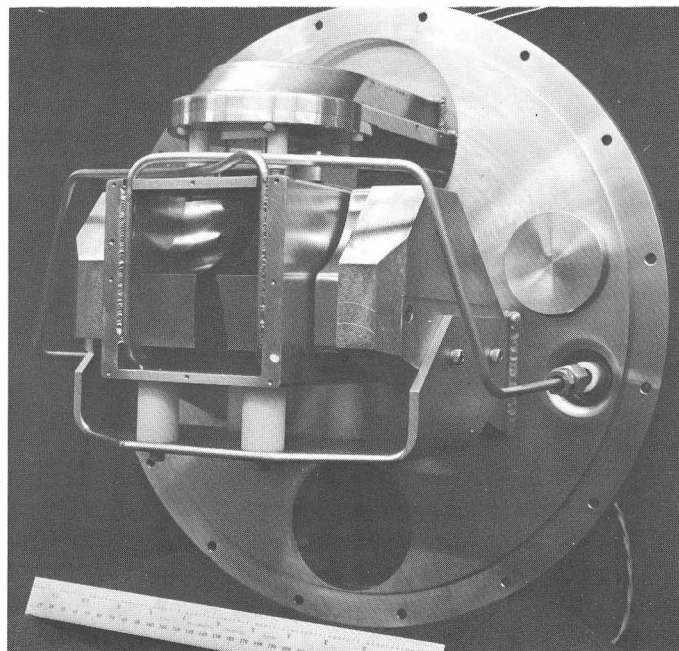
Mushrooms a la greque
Trout w/avgolemeo sauce
Broiled tomato w/provencal herbs
Chateau potatoes
Avocado and tomato salad
Apricot compote w/homemade biscuits

Wednesday, August 6 - 12:30 p.m. - \$4.50

Dill soup
Poached chicken breasts w/vinegar and
vermouth sauce
Sauteed fresh broccoli and mushrooms
Fresh salad
Chocolate mousse w/almonds

Thursday, August 7 - 7:30 p.m. - \$9.00

Shrimp salad fatma
Tournedos w/sauce bearnaise
Zucchini au gratin
Fresh salad
Dolce Torinese



Internal view of ion source assembly. Plasma source is at top beneath mounting assembly. Magnet poles are for focusing the beam and to provide magnetic field for plasma source.

OMBUDSMAN APPLICANTS

Fermilab employees interested in serving in the post of Fermilab Ombudsman are asked to apply in writing -- stating their qualifications and reasons for wishing to occupy this post -- to Philip V. Livdahl, Acting Deputy Director, MS105. The deadline to apply is August 22.

The Ombudsman is appointed by the Director to listen to employee problems -- and to endeavor to have remedial action taken. Meetings with the Ombudsman are confidential. Ombudsmen will hear personal and work-related problems of all employees. Ombudsmen are authorized to investigate all complaints and may contact all levels of management.

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SPECIAL NOTICE

On Saturday, Aug. 23, normal electrical and ventilation service in the Central Laboratory will be shut off between 6 a.m. and 6 p.m. Only minimal lighting, communications and elevator service will be maintained. The cafeteria will be closed. Please take these disruptions into account when making plans for that day.

DUPLICATING SERVICES SPECIAL ANNOUNCEMENT

In order to clarify delivery time for duplicating jobs run on the Xerox 7000, Duplicating Services now is using an official job schedule. With the exception of emergencies, this will show a requestor when he can expect his work to be completed. The schedule will be based on a first-come, first-served approach.

In order to avoid long waiting times, do-it-yourself users are encouraged to use the machine between 11:30 a.m. and 12:30 p.m., the department's lunch period. By calling the department on Ext. 3323, a time can be reserved. The reservation will be held for 10 minutes before the machine is released for the next job.

For additional information, contact Sybil Krebs, head of Duplicating Services.

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NEW IN THE LIBRARY

"Black Holes and Warped Spacetime,"
William J. Kaufmann.

"Black Holes: The Edge of Space, The End of Time," Walter Sullivan.

"The Big Bang," Joseph Silk.

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Members of the National Aeronautics and Space Administration and officials of Universities Research Association and Fermilab toured the Laboratory both on the ground and in a helicopter. URA is one of the organizations competing for the Space Telescope Science Institute. The NASA team was visiting the sites where the various organizations propose to build the Institute.



Members of the Fermilab Users Executive Committee (L-R) are Frank Turkot, Melvin Schwartz, John Rutherford, Thomas J. Devlin, Vincent Peterson, Sharon Hagopian, Charles M. Ankenbrandt, Phyllis Hale (Fermilab Users Office), Thomas Romanowski, Lawrence W. Jones, H. Richard Gustafson and Konstantin Goulianos.

JONES ELECTED CHAIRMAN OF USERS COMMITTEE

Lawrence W. Jones, University of Michigan, was elected chairman of the Fermilab Users Executive Committee at its July 24 meeting.

He succeeds John Rutherford, University of Washington. Elected secretary for the 1980-81 season was Thomas J. Devlin, Rutgers University.

The committee consists of 13 members, 12 of whom are elected for two-year terms. Six members were recently elected, and six members are serving their second year. The outgoing chairman continues as a member for an additional year as the 13th member.

This year's newly-elected members are H. Richard Gustafson, University of Michigan; Sharon Hagopian, Florida State University; Vincent Peterson, University of Hawaii; Thomas Romanowski, Ohio State University; Melvin Schwartz, Stanford University; and Frank Turkot, Fermilab.

Other members of the committee are Charles M. Ankenbrandt, Fermilab; George Brandenburg, Harvard University; Henry Frisch, University of Chicago; Konstantin Goulianos, Rockefeller University; Devlin, Jones and Rutherford.

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HO-HUM IT WASN'T

The card came in the mail earlier this month (July). It went:

"To all my friends at Fermilab. It isn't possible to describe the excitement of being here, playing a part in making history. I'm enjoying every minute of it. Your friend, Ron Smith."

For Smith, being a delegate to the national Republican convention was one of the most memorable and important episodes of his life. He represented the 14th Congressional District, which includes most of DuPage County. A designer with the Mechanical Support Group, Accelerator Division, Smith was one of five delegates elected in the March 18 primary to represent his district. Of course, he paid his own way, as all delegates do. "Being elected is considered an honor," he explained.

Every delegate takes home with him stories of the frantic pace and tumultuous moments, but Smith came back with an added dimension that he cherishes as number one on his list. "Being there and being a part of history, that, for me, was the most important thing." It was Smith's first convention that he attended as a delegate.

Those critical moments when the selection of the vice presidential candidate hung in the balance is another precious memory for Smith. Since the Illinois delegation was one of the first to learn that it was to be Bush over Ford, "the news media converged on us," said Smith. He added that some media representatives were excellent, but others were less than ideal. "It seemed to me that expediency took precedence over accuracy much too often," he added.

Smith is the Republican state central committeeman for his district and is helping coordinate Reagan's campaign in DuPage County.

Knowing what he now knows, would he do it over again? he was asked. "Six times a year," he responded enthusiastically. "I have a deep interest and have studied history and political science on my own for many years."

He has been with Fermilab for 12½ years.

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Ron Smith at the convention in Detroit.

REMINDER ABOUT JOINING BOWLING LEAGUE

On Aug. 4-8 in the lobby outside Curia II, CL2-SW, officers of the Fermilab winter bowling league will sign up bowlers for the coming season.

The fee is \$15 per bowler and includes the first and last two weeks of the bowling season. Competition will start Sept. 3 at Bowling Green in West Chicago. Bowling time runs from 5:45 to 8:30 p.m.

Because the league is expanding, bowling enthusiasts are encouraged to get their families and friends to also sign up, said Rose Muth, Ext. 4445. She and other league officers will be happy to answer any questions. Others are Ed Justice, 4553; Gary Smith, 3878; and Barb Kristen, 3199.

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SOFTBALL STANDINGS ON JULY 24

Team	Won	Lost
Jedi	9	1
Horny's Bushwackers	9	1
DV 8's	7	3
Satellites	4	5
Downtime 95	3	7
Ice Men	3	6
Bubble Chamber	2	8
Gamblers	2	8

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